

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

*Ex parte* OLAF ABELS and KLAUS BRÖKER

---

Appeal 2007-1549  
Application 10/632,017  
Technology Center 3600

---

Decided: October 31, 2007

---

Before WILLIAM F. PATE, III, JENNIFER D. BAHR and  
ANTON W. FETTING, *Administrative Patent Judges*.

JENNIFER D. BAHR, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Olaf Abels et al. (Appellants) originally appealed under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1, 5, 9-10, 12, 14, 17, 20, 23 and 28-31. The Examiner withdrew the rejection of claim 28 (Ans. 3). Accordingly, only claims 1, 5, 9-10, 12, 14, 17, 20, 23 and 29-31 are involved in this appeal. Claim 28 now stands objected to by the Examiner (Ans. 2). Claims 2-4, 6-8, 11, 13, 16, 18, 19, 21 and 22 have been

withdrawn from consideration and claims 15 and 24-27 have been canceled. We have jurisdiction over this appeal under 35 U.S.C. § 6 (2002).

## THE INVENTION

Appellants' invention is directed to the sealing of a ball and socket joint for wheel suspensions of motor vehicles that allows movement of a sealing bellows in the ball and socket joint without damage to the sealing bellows (Spec. 3:14-17). The ball and socket joint of the invention includes a ball pivot (3) with a joint ball (3.1) inserted into a housing holding a bearing shell (2) and a sealing bellows (4) between the housing (1) and the ball pivot (3) (fig. 10). A key feature of Appellants' invention is the sealing between the sealing bellows (4) and the ball pivot (3). Specifically, a ball race (5) is fitted to the ball pivot (3). A metallic, plastic or metal-plastic composite sliding ring (6)<sup>1</sup>, having an axial leg (6.3) and a radial leg (6.4), is inserted into the ball race (5) (Spec. 7:15-20). The ball race (5) has lugs (5.2) where the radial leg (6.4) contacts the ball race (5) (fig. 3). The sealing bellows (4) is then mounted between the ball race (5) and the sliding ring (6) so as to be in direct sliding contact with the inner surface of the ball race (5) (Spec. 8:1-4 and fig. 1).

Claim 1, the only independent claim, reads as follows:

1. A ball-and-socket joint, comprising:  
a housing;

---

<sup>1</sup> Appellants are advised that when providing a sectional view of a metallic, plastic or metal-plastic composite structure the symbols recommended in MPEP §608.02(IX) should be employed. Cross-hatching is not an appropriate drawing symbol for a metallic, plastic or metal-plastic structure.

a bearing shell inserted into said housing;

a ball pivot with a joint ball mounted pivotally in all directions in said bearing shell;

a sealing bellows between the housing and the ball pivot, said sealing bellows having a pivot-side edge area;

a ball race fixed on said ball pivot; and

a sliding ring receiving said pivot-side edge area of said sealing bellows, said sliding ring being mounted to slide in said ball race, said sliding ring having a sliding surface facing the joint ball arranged adjacent to the ball race, wherein said ball race has a leg which is in contact with said sliding ring, said leg comprising lugs arranged at spaced locations from one another.

### THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Gardner	US 2,197,037	Apr. 16, 1940
Yao (as translated)	JP 2-199317	Aug. 7, 1990

Appellants seek review of the Examiner's rejections of claims 1, 5, 9-10, 12, 14, 17, 20, 23, and 29 under 35 U.S.C. 102(b) as anticipated by Yao and, claims 30 and 31 under 35 U.S.C. 103(a) as obvious over Yao in view of Gardner.<sup>2</sup>

The Examiner provides reasoning in support of the rejections in the Answer (mailed November 16, 2006). Appellants present opposing

---

<sup>2</sup> The rejection of claims 1 and 28 as anticipated by Amrath has been withdrawn (Ans. 3).

arguments in the Appeal Brief (filed August 31, 2006) and Reply Brief (filed January 11, 2007).

## OPINION

### *The anticipation rejection based on Yao*

Appellants argue all the claims rejected under 35 U.S.C. §102(b) together as a group. Therefore, in accordance with 37 C.F.R. 41.37(c)(1)(vii), we have selected claim 1 as the representative claim to decide the appeal of the anticipation rejection, with claims 5, 9-10, 12, 14, 17, 20, 23 and 29 standing or falling with claim 1.

The Examiner explains where the elements of claim 1 are disclosed in Yao by labelling them in the marked-up Figure 3 of Yao appended to the Examiner's Answer and Appellants do not dispute these findings. The Examiner found that Yao discloses a seal structure of a dust cover for a ball joint including, a ball pivot (ball stud 2) with a joint ball (spherical head 4) inserted into a housing (6) holding a bearing shell (bearing 5), a sealing bellows (dust cover 8) having a pivot-side edge area (annular fitting rings 23), a ball race (ring collar 13) fixed to the ball pivot (2) and, a sliding ring (A1, as labelled by the Examiner) having an axial leg (A50, as labelled by the Examiner) and a radial leg (A51, as labelled by the Examiner). The joint ball (4) is pivotally mounted in all directions in the bearing shell (5).

Appellants' arguments as to why Yao does not anticipate claim 1 is that Yao does not show: (1) a sliding ring that is mounted to slide in the ball race (App. Br. 6); (2) a ball race having a leg that is in contact with the sliding ring with the leg comprising lugs arranged at spaced locations from

one another (App. Br. 8); and (3) a sliding ring having a sliding surface facing the joint ball that is adjacent to the ball race (Reply Br. 2).

Appellants' first argument is based on Yao's description of the sliding ring (A1) as being embedded in the sealing bellows (8) (App. Br. 6). According to Appellants, because the sealing bellows (8) touches the ball race (13) on three sides, the sealing bellows (8) cannot slide in the ball race (13) and as such, the embedded sliding ring (A1) also cannot slide in the ball race (13) (App. Br. 7). Therefore, according to Appellants, Yao does not disclose that the "sliding ring slides within the ball race" (App. Br. 7).

The Examiner agrees with Appellants that the sealing ring (A1) is embedded in the sealing bellows (8). However, the Examiner asserts that, although the sliding ring is embedded, because the recesses of the ring projections (11) contain lubricant that permits sliding and rotation between the sealing bellows (8) and the ball race (13), the sliding ring (A1) will also slide along with the sealing bellows when the sealing bellows slides relative to the ball race 13 (Ans. 8). As best seen in Figure 3 of Yao, the embedded ring (A1) is positioned within the ball race (13) and slides *along* with the sealing bellows (8) when the bellows slides relative to the ball race (13), thereby sliding "in said ball race." Therefore, we agree with the Examiner's finding that the sliding ring of Yao is "mounted to slide in said ball race."

Addressing Appellants' second and third arguments, the crux of the arguments rests on whether Yao discloses all of the argued elements of claim 1. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, *cert. denied*, 484 U.S. 827 (1987). The Examiner found that Yao

discloses a ball race (13) including a leg (15) having four equally spaced-apart lugs (28), wherein an axial leg (A51) of sliding ring (A1) is in contact with leg (flange 15) of the ball race (13) (Ans. 8 and figs. 3-4 of Yao). The Examiner also describes a “sliding face A9 facing the joint ball 4 arranged adjacent to the ball race 13” (Ans. 4 and 11). We agree with the Examiner. While the sliding face (A9, as labelled by the Examiner) does not contact the ball race 13, the term “adjacent,” ordinarily understood to mean “not distant” or “nearby” (*Merriam Webster’s Collegiate Dictionary* (Tenth Ed. 1997)), does not require contact.

In light of the above, Appellants’ arguments do not demonstrate error in the Examiner’s rejection of independent claim 1 and dependent claims 5, 9-10, 12, 14, 17, 20, 23 and 29, which stand or fall with independent claim 1, as anticipated by Yao. Accordingly, the rejection is sustained.

*The obviousness rejection based on Yao and Gardner*

Claims 30 and 31 depend from claim 1 and further require that the sliding ring have a radial leg in sliding contact with an inner surface of the ball race. Yao discloses that the axial leg (A50), but not the radial leg (A51), is in contact with an inner surface of the ball race (13) (Ans. 12). Gardner shows a ball and joint seal including an L-shaped sliding ring (section 27) having a radial leg (bottom flange 30) in contact with an inner surface of a ball race (section 26) (figs. 2 and 3 of Gardner). Gardner also discloses that bellows (leather jacket 19) “fits snugly but rotatably” between sliding ring (27) and ball race (26) (Gardner, p. 1, col. 2, ll. 35-40), hence allowing for rotation of the bellows (jacket 19) between the ball race (26) and the sliding ring (27). The Examiner finds that the arrangement of

Gardner shows a radial leg (30) in sliding contact with an inner surface of the ball race (26) (Ans. 6) and Appellants do not specifically dispute this finding. To use the sliding ring of Gardner as “an alternative design consideration for mounting a sealing bellows to the ball race without embedding the sliding ring” (Ans. 6) in the sealing arrangement of Yao would have been obvious to one of ordinary skill in the art at the time of Appellants’ invention.

While there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness, “the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l. Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007).

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

*Id.* at 1740, 82 USPQ2d at 1396. We must ask whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* Here, the substitution of Yao’s sliding ring with that of Gardner does not appear to be difficult for one of ordinary skill in the

Appeal 2007-1549  
Application 10/632,017

art because it is no more than “the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement.” *Id.* Therefore, the substitution appears to be the product not of innovation but of ordinary skill and common sense and thus does not patentably distinguish claims 30 and 31 from Yao.

#### SUMMARY

The decision of the Examiner to reject claims 1, 5, 9-10, 12, 14, 17, 20, 23 and 29-31 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2006).

#### AFFIRMED

vsh

BRIAN M. DUNCAN  
MCGLEW & TUTTLE, PC  
P.O. BOX 9227  
SCARBOROUGH STATION  
SCARBOROUGH, NY 10510-9227